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(54) **Radial flow blower**

(57) The blower, which produces high pressures while at the same time operating at reduced noise, comprises an air inlet aperture 5 and a noise reducing air baffle 3, the upper and lower edge 13, 11 of which are each curved into a spiral. Generally the lower edge 11 is more severely curved than the upper edge 13.

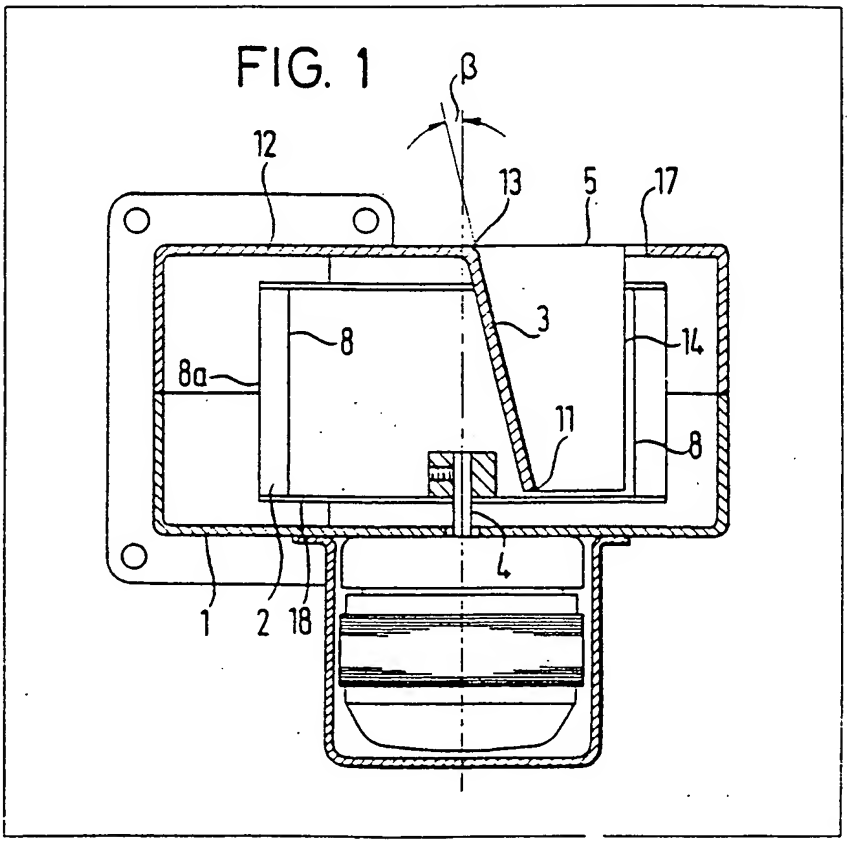

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FIG. 1

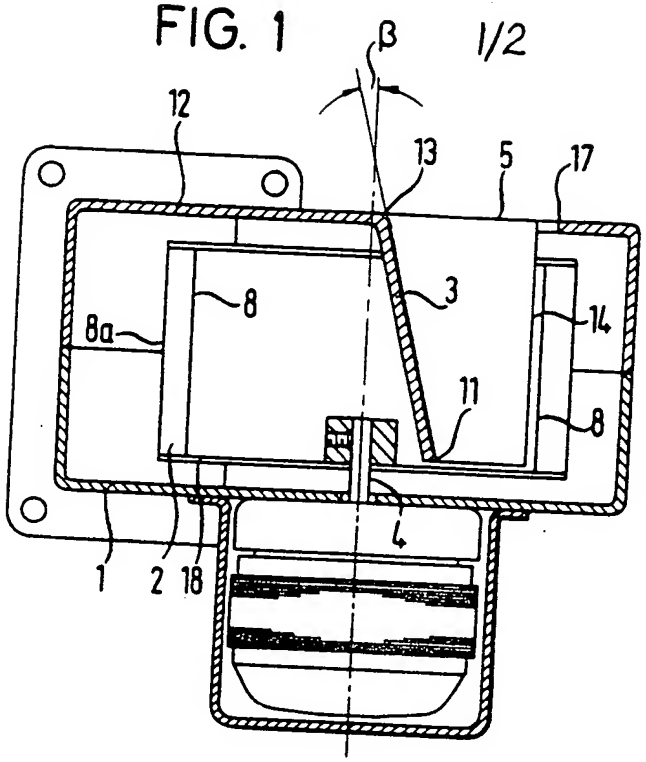

β
12
13
5
17
8
3
8a
14
11
8
4
1
2
18

FIG. 2

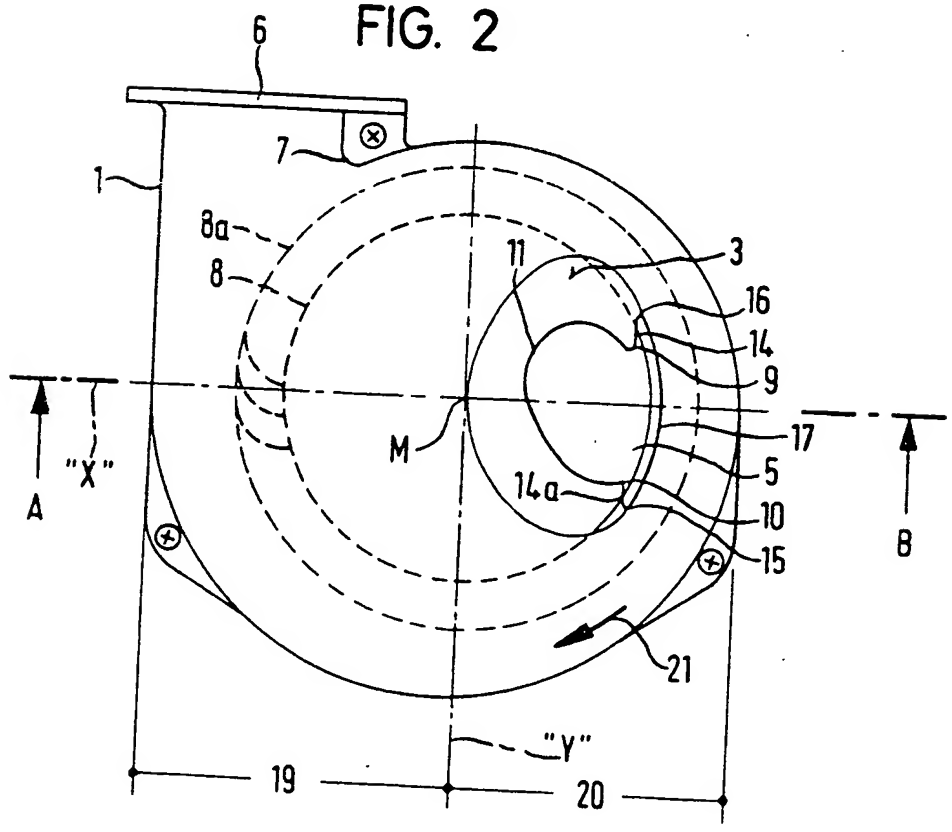

6
7
1
8a
8
11
3
16
14
9
17
5
M
14a
10
15
A
"X"
B
21
"Y"
19
20

FIG. 3

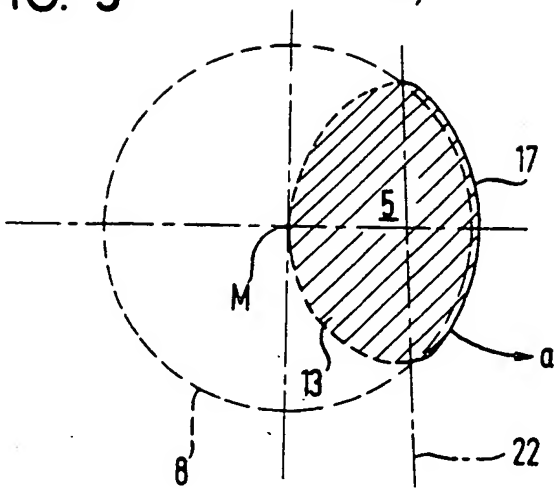
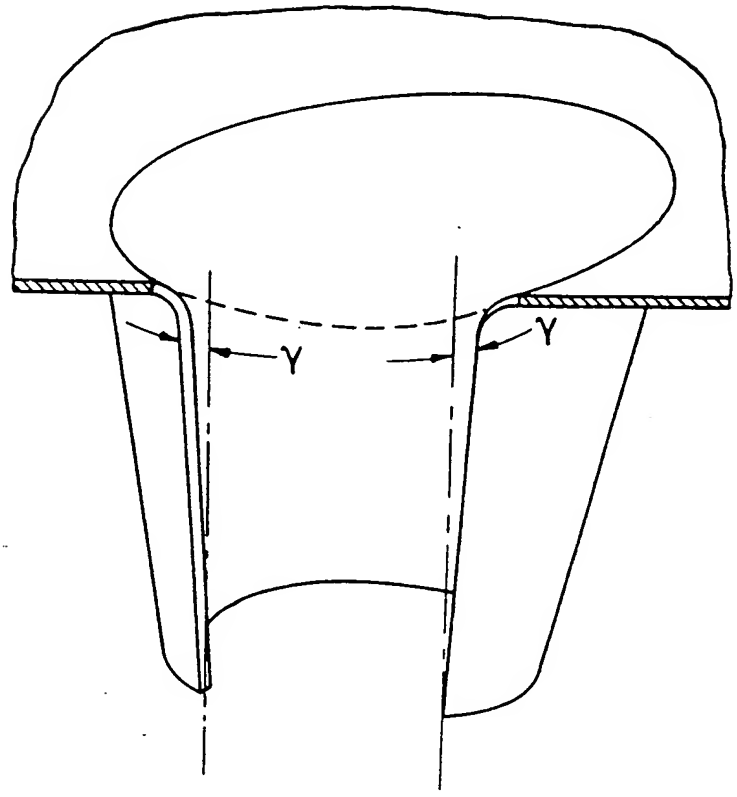


FIG. 4



25% with regard to the total cross-sectional area of the air inlet aperture 5. A further increase in the pressure is ensured by this arrangement.

The pressure-volume characteristic can additionally be varied by the cross-section of the air inlet aperture 5 as well as with the size, bound up therewith, of the air baffle 3. The air inlet aperture 5 can be rotated in or against the direction indicated by arrow A (Fig. 2) by 5° to 30° with regard to the axis 22 of the air inlet aperture 5.

It proves to be advantageous for the length of the upper edge 13 of the air baffle 3 to constitute approximately half to $\frac{3}{4}$ of the circumference of the air inlet aperture 5. In this respect the air baffle 3 is to be so inclined that it lies within an angle β of $5° \leq \beta \leq 45°$, in which respect the axial length preferably extends as far as or close to the lower edge 18 of the blower wheel 2. The angle β changes in its course continuously from the edge region of the edge 14, namely it is greater in the region of the edge 14 than the edge of edge 14*a*. This change is from 17° to 11°. In the central region of the air baffle 3 16 is 13°.

The pressure rise achieved by this measure assumes almost double the value which is possible with a corresponding blower without the air baffle 3 in accordance with the invention, but here with the further advantage in accordance with the invention that the noise level is additionally lowered as compared with the known radial blowers.

It should additionally be pointed out that edge 17 (Fig. 2) either extends in the entire region between the inner edge 8 and outer edge 8*a* of the blower wheel 2 or may also intersect the inner edge 8 of the blower wheel 2, but in this way protrude only in a slight region beyond the blower wheel 2. It is, however, also possible for the edge 17 of the air baffle 3 to be so designed that it does not intersect the blower wheel 2 and extends approximately parallel to the inner edge 8. Such a twisting of the air inlet aperture 5 must, however, at all times be bound up with an appropriate correction of the air baffle 3 in such a way that the edges 14, 14*a* preferably butt tightly against the inner edge 8 of the blower wheel 2.

It is also possible for the upper edge 13 of the air baffle 3 to be beyond the centre point M (i.e. be shifted to the left with respect to Fig. 2). In fact the upper edge 13 of the air baffle 3 may lie within a region which, related to the outside diameter of the blower wheel 2, is staggered by ±40 percent radially to the blower or fan wheel axis.

Parts List

1 = casing
2 = blower wheel or radial blower wheel
3 = air baffle
4 = axis
5 = air inlet aperture
6 = air outlet aperture
7 = air deflection point
8 = inner edge/inner ring of the blower wheel 2
8*a* = outer edge/outer ring of the blower wheel 2.
9 = corner of the lower edge 11 of the air baffle 3
10 = corner of the lower edge 11 of the air baffle 3
11 = lower edge of the air baffle 3
12 = upper edge of the casing 1
13 = upper edge of the air baffle 3
14*a*, 14 = edges which extend from the corners 9/10 of the lower edge 11 of the air baffle 3 as far as the corners 15/16 of the upper edge 13 of the air baffle 3
15 = corners of the upper edge 13 of the air baffle 3
16 = corners of the upper edge 13 of the air baffle 3
17 = casing edges which form a part of the air inlet aperture 5
18 = lower edge of the blower wheel 2
19 = eccentricity
20 = eccentricity
21 = direction of rotation of the blower wheel 2
22 = axis of the air inlet aperture 5
x = abscissa
y = ordinate

CLAIMS

1. A radial blower comprising an air baffle or cooling baffle aligned at an angle to the axis of the blower's wheel, disposed in a partial region of the blower's casing jacket, which jacket forms part of an air inlet aperture, and having a geometric shape, characterised in that an upper and lower edge of the air baffle are formed from partial curves which correspond substantially to an archimedian spiral and in that the lower edge is shorter than the upper edge.

2. A radial blower as claimed in claim 1, characterised in that the lower edge ends in the region of a lower edge of the blower wheel.

3. A radial blower as claimed in claim 1 or 2, characterised in that the lower edge of the air baffle makes up about $\frac{3}{4}$ of the length of the upper edge or less.

4. A radial blower as claimed in claim 1, 2 or 3 characterised in that both spirals of lower edge and upper edge extend uniformly and are approximately spiral-shaped.

5. A radial blower as claimed in any preceding claim, characterised in that the air baffle is arranged asymmetrically to the abscissa (*x*).

6. A radial blower as claimed in any preceding claim, characterised in that the length of the upper edge of the air baffle constitutes approximately half to $\frac{3}{4}$ the circumference of the air inlet aperture.

7. A radial blower as claimed in any preceding claim, characterised in that the edges of the air baffle extend parallel to the blower wheel.

8. A radial blower as claimed in any preceding claim, characterised in that the edges which connect the corners of the air baffle extend in the axial direction parallel to the blower wheel but in the circumferential direction of the blower wheel, considered from the air inlet aperture, are aligned

on one side, or on both sides, at an angle γ from 0° to 45°.

9. A radial blower as claimed in claim 8, characterised in that the edges of the air baffle are rounded off (for example with a radius from 2 to 5 mm).

10. A radial blower as claimed in any preceding claim, characterised in that the upper edge of the air baffle lies within a region which, related to the outside diameter of the blower wheel, is staggered by ±40 percent radially to the blower or fan wheel axis.

11. A radial blower as claimed in any preceding claim, characterised in that the air baffle is arranged at angle β, related to an imaginary parallel straight line to the fan axis, of not less than 5° and not substantially greater than 45°.

12. A radial blower as claimed in any preceding claim, characterised in that the air inlet aperture begins in a region which lies between the inner edge and the outer edge of the radial wheel.

13. A radial blower as claimed in any preceding claim, characterised in that the axis of the blower wheel, emanating from the air deflection point, is eccentrically staggered in the direction of rotation of the blower wheel to increase the pressure in the direction of the inner surface of the radial blower casing.

14. A radial blower as claimed in claim 1, characterised in that the air inlet aperture corresponds approximately to the shape of an ellipse.

15. A radial blower as claimed in any preceding claims, characterised in that the air inlet aperture is disposed laterally of the ordinate (y), namely in the chamber part which lies remote from the air outlet aperture.

16. A radial blower as claimed in any preceding claim, characterised in that the longer axis of the ellipse is aligned at an angle to the ordinate (y).

17. A radial blower as claimed in any preceding claim, characterised in that the air inlet aperture is arranged asymmetrically to the x-axis.

18. A radial blower as claimed in any preceding claim, characterised in that the air inlet aperture protrudes outwardly at least partially beyond the outer edge of the fan wheel.

19. A radial blower as claimed in claim 18, characterised in that the projecting length constitutes 3 percent to 25 percent with regard to the total cross-sectional area of the air inlet aperture.

20. A radial blower as claimed in any preceding claim, characterised in that the air inlet aperture can be rotated in or against the direction of the arrow A by 5° to 30° with regard to the axis of the air inlet aperture.

21. A radial blower as claimed in any preceding claim, characterised in that the angle β changes in its course.

22. A radial blower as claimed in any preceding claim, characterised in that the angle β varies continuously, starting from the edge region of the edge, namely it is greater in the region of the edge than at the edge of the edge.

23. A radial blower as claimed in at least one of the preceding claims characterised in that the angle β, starting from the edge region of the edge, changes continuously, namely from about 17° to about 11° at the edge of the edge, in which respect the angle β is in the central region of the air baffle preferably about 13°.

24. A radial blower as claimed in at least one of the preceding claims, characterised in that the central point of the radial wheel lies inside the air inlet aperture.

25. A radial blower substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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